

FORMATION AND DEVELOPMENT OF THE ECOSYSTEM APPROACH IN INTERNATIONAL ENVIRONMENTAL LAW BEFORE THE CONVENTION ON BIOLOGICAL DIVERSITY

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ABSTRACT

The article analyses general aspects of the formation and development of the ecosystem approach in international environmental law before the adoption and entry into force of the Convention on Biological Diversity. On the grounds of thorough and complex research encompassing the main international environmental agreements and scientists' views, it is concluded that the issues of protection and conservation of natural ecosystems and implementation of the ecosystem approach had already received wide support at the international level by that time, whereas adopted agreements created the necessary base for the further formation and development of the ecosystem approach as a holistic concept under the Convention on Biological Diversity.

Keywords: Environmental law; International agreements; Sustainable development; Biological diversity; Ecosystem; Ecosystem approach

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1. INTRODUCTION

From a historical perspective, the whole process of formation and development of the ecosystem approach in international environmental law can be divided into three interdependent and complementary periods: pre-Convention, Convention and post-Convention, which are consistent with the adoption on 5 June 1992 of the Convention on Biological Diversity¹ (CBD) at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro (Brazil, 3–14 June 1992).

Conforming to the CBD, its objectives are the conservation of biodiversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.² The CBD contains a definition of an 'ecosystem', which is a dynamic complex of plant, animal and microorganism communities and their non-living environment interacting as a functional unit,³ and the obligations for the conservation of ecosystems: to promote its protection; to rehabilitate and restore degraded ecosystems; to prevent the introduction of, control or eradicate those alien species which threaten ecosystems, etc.⁴

The CBD does not specify an ecosystem approach, but its main provisions are contained in a number of decisions of the meetings of its governing body – the Conference of the Parties (COP). At the First meeting of the COP (Nassau, Bahamas, 1994) the Contracting Parties confirmed that the planet's essential goods, ecological functions and services depend on the variety and variability of ecosystems, and if humanity is to have a future on this earth, biological diversity must be conserved, because its depletion causes threats to ecosystems that are vital for the sustenance of human societies in all countries.⁵ And, at the Second meeting of the COP (Jakarta, Indonesia, 1995) the ecosystem approach was recognized as the primary framework of action to be taken under the CBD.⁶

But the most productive with regard to the ecosystem approach was the Fifth meeting of the COP (Nairobi, Kenya 2000), because it adopted

¹ Convention on Biological Diversity (adopted 5 June 1992, entered into force 29 December 1993) 1760 UNTS 69 (CBD).

² ibid art 1.

³ ibid art 2.

⁴ ibid paras 'd', 'f', 'h' of art 8.

⁵ Decision adopted by the Conference of the Parties to the Convention on Biological Diversity at its First Meeting (Nassau, 28 November – 9 December 1994). Decision I/8: Preparation of the participation of the Convention on Biological Diversity in the third session of the Commission on Sustainable Development, UNEP/CBD/COP/DEC/I/8.

⁶ Decisions adopted by the Second Meeting of the Conference of the Parties to the Convention on Biological Diversity (Jakarta, 6–17 November 1995). Decision II/8: Preliminary consideration of components of biological diversity particularly under threat and action which could be taken under the Convention, UNEP/CBD/COP/2/19.

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Decision V/⁷ which contains a description of the ecosystem approach, a list of its 12 interrelated and complementary principles and 5 operational guidance for their application (sections 'A', 'B' and 'C' of the Annex). According to section 'A', the ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. This approach is based on the application of appropriate scientific methodologies focused on levels of biological organization, which encompass the essential structure, processes, functions and interactions among organisms and their environment, and recognizes that humans, with their cultural diversity, are an integral component of many ecosystems.

It should be noted that there is no consensus in academic circles on the concept and nature of the ecosystem approach and its relationship to other similar approaches, but for clarity we will use R.A. Perelet's formulation that the ecosystem approach is a means of examining the relationships within ecosystems with other systems and people for whom ecosystems are habitats and livelihoods, and aims to ensure the long-term sustainability of biodiversity and the significant development of current understanding of sustainable nature.⁸

Precisely in the context, introduced by the CBD, the ecosystem approach is considered by many experts in international environmental management and law.⁹ However, despite the fact that, indeed, the ecosystem approach as a holistic concept began to be developed under the CBD, numerous references to it can also be found in international environmental agreements adopted much earlier.

2. THE AIM OF THE ARTICLE

A certain contribution to the coverage of the formation and development process of the ecosystem approach in international environmental law, in particular, in covering its pre-Convention period, was made by both domestic and foreign scientists including M.O. Medvedieva

⁷ Decisions adopted by the Conference of the Parties to the Convention on Biological Diversity at its Fifth Meeting (Nairobi, 15–26 May 2000). Decision V/6: Ecosystem Approach, UNEP/CBD/COP/5/23.

⁸ RA Perelet, 'Ekosistemnyiy podhod k upravleniyu prirodopolzovaniem i prirodoohhrannoy deyatel'nostyu' (2006) 1 Mechanism of Economic Regulation 39.

⁹ G Henne, 'The Ecosystem Approach under the Convention on Biological Diversity: A workshop which was held in Lilongwe, Malawi, during 26-28 January 1998' (1998) 25(3) Environmental Conservation 273–275; RD Smith and E Maltby, *Using the Ecosystem Approach to Implement the Convention on Biological Diversity: Key Issues and Case Studies* (Gland: IUCN 2003) 118; E Morgera, The Ecosystem Approach under the Convention on Biological Diversity: A Legal Research Agenda (2015). E Morgera, 'Ecosystem and Precautionary Approaches' in J Razzaque and E Morgera (eds) *Encyclopedia of Environmental Law: Biodiversity and Nature Protection Law* (EE, 2016), Forthcoming, Scottish Centre for International Law Working Paper Series No. 7, Edinburgh School of Law Research Paper No. 2015/17, etc.

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(who compiled a list of international legal acts, which, in her opinion, contain references to elements or principles of the ecosystem approach),¹⁰ F.M. Platjouw (who not only listed such acts, but, using ten-year periodization, categorized them into those that were adopted in the 1970s, 1980s and 1990s, though almost without references to scientists' comments),¹¹ V. De Lucia (who in his fundamental research touched on a brief historical account aimed at showing the early history of the 'ecosystem approach' concept so as to highlight its genealogical character),¹² and others.

In some scientific papers on the ecosystem approach, if its historical aspect is studied, then either it is considered only in relation to narrow areas and sectors, such as watercourses and water resources, living marine resources, fisheries management, forestry policy, etc.,¹³ or exclusively within the framework of individual international conventions.¹⁴

Based on the foregoing background, it becomes obvious that the historical foundations of the ecosystem approach require additional and complex analysis, taking into account a more thorough and comprehensive

¹⁰ M Medvedieva, 'Ekosistemnyi pidkhid u mizhnarodnomu pravi navkolyshnoho seredovyshcha: problemy rozuminnia ta zastosuvannia' (2010) 2 Pravo Ukrayiny 184–189.

¹¹ FM Platjouw, *Environmental Law and the Ecosystem Approach: Maintaining Ecological Integrity through Consistency in Law* (London: Routledge 2016) 232.

¹² V De Lucia, *The 'Ecosystem Approach' in International Environmental Law: Genealogy and Biopolitics* (Routledge 2019) 311.

¹³ O McIntyre, 'The Emergence of an 'Ecosystem Approach' to the Protection of International Watercourses under International Law' (2004) 13(1):1 Review of European Community and International Environmental Law 1–14; M Erdem, 'Ecosystem Approach to Environmental Protection in the Law of International Watercourses' (2013) (Special issue) Dokuz Eylul University Law Journal 1359–1391; DEJ Currie, *Ecosystem-Based Management in Multilateral Environmental Agreements: Progress towards Adopting the Ecosystem Approach in the International Management of Living Marine Resources* (Rome: WWF International, Global Species Programme 2007) 53; SR Enright and B Boteler, 'The Ecosystem Approach in International Marine Environmental Law and Governance' (2020) in: O'Higgins T., Lago M., DeWitt T. (eds) *Ecosystem-Based Management, Ecosystem Services and Aquatic Biodiversity*. Springer, Cham 333–352; WR Turrell, *The Policy Basis of the 'Ecosystem Approach' to Fisheries Management* (Norrköping: EuroGOOS 2004) 28; ML Wilkie, P Holmgren and F Castañeda, *Sustainable forest management and the ecosystem approach: two concepts, one goal* (Forest Resources Division FAO, Rome 2003) 31, etc.

¹⁴ MN Kopylov and AM Solncev, 'Ramsarskaja konvencija 1971 g. i jekosistemnyj podhod k razumnomu ispol'zovaniju i ustojchivomu razvitiyu vodno-bolotnyh ugodij' (2012) <<https://wiselawyer.ru/poleznoe/60725-ramsarskaya-konvenciya-1971-ehkosistemnyj-podkhod-razumnomu-ispolzovaniyu>> accessed 15 April 2021; C Redgwell, 'Protection of Ecosystems under International Law: Lessons from Antarctica' in A Boyle and D Freestone (eds), *International Law and Sustainable Development* (OUP 1999) 224; KT Nguen, 'Konvencija ASEAN 1985 g. kak hronologicheski vtoroj primer jekosistemnogo upravlenija' (2011) 1–2 (45–46) Mezhdunarodnoe pravo 108–112; OV Rudenko, 'Alpiiska konventsii – zrazok ekosistemnoi paradyhymy pryrodookhoronnoho zakonodavstva' (2011) 559 Naukovyi visnyk Chernivetskoho universytetu. Jurisprudence 62–65, etc.

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research of the main international environmental agreements and different views of scientists. Given this, but without pretending to be an exhaustive study, this article has covered well-known and unknown (to a wide range of readers) facts and opinions concerning general aspects of formation and development of the ecosystem approach in international environmental law before the adoption and entry into force of the CBD.

3. AWARENESS OF THE IMPORTANCE OF CONSERVING ECOSYSTEMS

The term 'ecosystem', which is central to the ecosystem approach, was coined by A.G. Tansley, who wrote that when we are trying to think fundamentally, we cannot separate organisms from their special environment, with which they form one physical system. The formed, in this way, systems are the basic units of nature. These ecosystems, as we may call them, are of various kinds and sizes, and form one category of the multitudinous physical systems of the universe, which range from the universe as a whole down to the atom.¹⁵

In subsequent years, numerous definitions of the ecosystem were developed in scientific literature (R.L. Lindeman, F.C. Evans, F.R. Fosberg¹⁶ and many others), but perhaps the greatest contribution to the development of the ecosystem concept was made by E.P. Odum, who described an ecosystem as any entity or natural unit that includes living and non-living parts interacting to produce a stable system in which the exchange of materials between the living and non-living parts follows circular paths¹⁷, and he claimed that it is the main functional unit in ecology, as includes both organisms and inanimate environment – components that mutually affect each other's properties and are necessary to maintain life in its form that exists on Earth.¹⁸

Besides, thanks to the E.P. Odum's research that the understanding of importance of the stable functioning of ecosystems was emerged in the public consciousness, as ignorance in maintaining balance in ecosystems becomes a threat to human existence.¹⁹ According to the scientist, the idea of an ecosystem and the realization that humanity is part of complex biogeochemical cycles are the basic concepts of ecology, which are designed to play a crucial role in the life of mankind; they should be the basis for the

¹⁵ AG Tansley, 'The Use and Abuse of Vegetational Concepts and Terms' (1935) 16(3) Ecology 299.

¹⁶ RL Lindeman, 'The Trophic-Dynamic Aspect of Ecology' (1942) 23(4) Ecology 399–417; FC Evans, 'Ecosystem as the Basic Unit in Ecology' (1956) 123(3208) *Science* 1127–1128; FR Fosberg, 'The island ecosystem', in FR Fosberg (ed.), *Man's Place in the Island Ecosystem: a Symposium* (Bishop Museum Press: Honolulu 1963) 1–6.

¹⁷ EP Odum, *Fundamentals of ecology* (Philadelphia: W.B. Saunders Company 1953) 9.

¹⁸ Ju Odum, *Jekologija* (Moscow: Mir 1986), 24. Translated from: EP Odum, *Basic Ecology* (New York: CBS College Publishing 1983).

¹⁹ ibid 77.

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conservation of natural resources. That is why approaches to the study of the ecosystem must be combined and translated into a program of action if humans want to survive the current environmental crisis they have created.²⁰

Modern ecologists are no less eloquent on this issue, claiming that the point of global environmental changes that have occurred over the past 50–100 years is the destruction of ecosystems on vast land areas, in the waters of semi-enclosed seas and the coastal oceanic zone, which threatens the biosphere with the most catastrophic consequences. Destruction and deformation of natural ecosystems (forest, tropical, steppe, forest-tundra, etc.) as a result of human economic activity are, without a doubt, the most important and essential aspect of the global environmental crisis.²¹

Taking into account the functions of ecosystems in nature and their importance for maintaining its favourable state, the need to preserve and restore ecosystems as the main structural units of the biosphere has become extremely urgent. From these considerations, the ecosystem approach as a new strategy for natural resource management was developed in international environmental law.

The pre-Convention period of the ecosystem approach dates back to the 1960–1970s, when the general public learned about the threat looming over the biosphere. It is at this time that international organizations and non-governmental organizations were created to deal with different environmental issues, numerous literary and scientific works were published touching upon various environmental problems, intergovernmental scientific programs were developed, and international environmental congresses and conferences were convened.

The first attempt to involve the world community and governments in the practical solution of global environmental problems was the United Nations Conference on the Human Environment in Stockholm (Sweden) on 5–16 June 1972 (UNCHE, also known as the Stockholm Conference). In the process, a number of interrelated and complementary documents were adopted, the leading one being the Declaration of the United Nations Conference on the Human Environment²² (Stockholm Declaration) divided into two parts. The first part contained seven theses proclaiming and explaining the responsibility of man to nature, awareness of the special mission of mankind and the necessity of solving accumulated problems. The second part contained 26 principles guiding in solving environmental issues and problems. Principle 1 establishes the link between the duty to protect the environment and the realization of fundamental human rights and

²⁰ Ju Odum, *Osnovy jekologii* (Moscow: Mir 1975) 50, 51. Translated from: EP Odum, *Fundamentals of ecology. Third edition* (Philadelphia–London–Toronto: W.B. Saunders Company 1971).

²¹ VI Danilov-Danil'jan, KS Losev and IE Rejf, *Pered glavnym vyzovom civilizacii: Vzgljad iz Rossii* (Moscow: INFRA-M 2005).

²² Report of the United Nations Conference on the Human Environment (UN, New York 1973) A/CONF.48/14/Rev.1.

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freedoms. Principles 2–7 are devoted to the problems of using the planet's natural resources and the conservation of species diversity on Earth. Principles 8–25 cover measures to protect and improve environmental conditions. The last principle (26) deals with the consequences of the use of nuclear weapons and weapons of mass destruction.²³

Analyzing the Stockholm Declaration, it can be argued that despite its lack of binding legal force and its anthropocentricity (the need to protect nature is motivated by human interests), it was crucial not only for the development of international environmental law, but also for the development of an ecosystem approach. Some of its principles explicitly mention the need to conserve ecosystems and states that 'the natural resources of the Earth, including the air, water, land, flora and fauna and especially representative samples of natural ecosystems, must be safeguarded for the benefit of present and future generations through careful planning or management', and that any negative impact on the environment 'must be halted in order to ensure that serious or irreversible damage is not inflicted upon ecosystems'.²⁴

In several principles of the Stockholm Declaration, ecosystem conservation is noted indirectly by recognizing the need to support the ecosystem functions of natural objects. For example, the Declaration states that 'the capacity of the Earth to produce vital renewable resources must be maintained and, wherever practicable, restored or improved'.²⁵ There are also principles where the requirements for the equitable use of natural resources are enshrined in order 'to ensure that benefits from such employment are shared by all mankind',²⁶ as well as principles that emphasize the adaptation of integrated and coordinated approach to States' development planning 'so as to ensure that development is compatible with the need to protect and improve environment for the benefit of their population', and which stress the importance of rational planning as a means of 'reconciling any conflict between the needs of development and the need to protect and improve the environment'.²⁷ In general, according to experts in public international law, in particular G. Handl, a strong undercurrent in this Declaration is sustainable development, even though the World Commission on Environment and Development (WCED) was not to coin the concept until several years after Stockholm.²⁸

²³ IA Cverianashvili, 'Stokgol'mskaja konferencija 1972 g. i ejo rol' v stanovlenii mezhdunarodnogo jekologicheskogo sotrudnichestva' (2016) 1 Vestnik Nizhegorodskogo universiteta imeni N.I. Lobachevskogo 91.

²⁴ Stockholm Declaration principles 2, 6.

²⁵ ibid principle 3.

²⁶ ibid principle 5.

²⁷ ibid principles 13, 14.

²⁸ G Handl, 'Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration), 1972 and the Rio Declaration on Environment and Development, 1992' (2013) United Nations Audiovisual Library of International Law 5.

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So, the Stockholm Declaration, approved at the Stockholm Conference in 1972, has become a reference point for awareness of the importance of conserving natural ecosystems on a global scale. Not without reason, one year after this Conference, its Secretary-General M.F. Strong wrote in his article 'One Year after Stockholm: An Ecological Approach to Management':

"For the first time we began to see that all mankind literally is in the same boat – that the world community is faced with its first truly global problem. It was the truth that ecologists and poets before them had been trying to tell us: in nature everything is tied together."²⁹

The ecosystem trend introduced by the Stockholm Declaration can be clearly seen in the World Conservation Strategy³⁰ (WCS) prepared by the International Union for Conservation of Nature and Natural Resources (IUCN) and published on 5 March 1980. The WCS notes that human beings, in their quest for economic development and enjoyment of the riches of nature, must come to terms with the reality of resource limitation and the carrying capacities of ecosystems, and must take account of future generations' needs. This is the message of conservation, for if the objective of development is social and economic welfare, the motif of conservation is to ensure Earth's capacity to sustain development and to support all life.³¹

One of the main objectives of living resource conservation the WCS recognizes is the maintenance of essential ecological processes (those processes that are governed, supported or strongly moderated by ecosystems and are essential for food production, health and other aspects of human survival and sustainable development) and 'life-support systems', for example, watershed forests or coastal wetlands. The maintenance of such processes and systems is vital for all societies regardless of their stage of development.

The leading place in the WCS is occupied by the preservation of genetic diversity and the sustainable utilization of species and ecosystems. It is noted that unique ecosystems should be protected as a matter of priority, and for this reason only those uses compatible with their preservation should only be permitted. At the same time, a complete range of ecosystems in each country should be protected so that the range of diversity in nature is preserved. In addition, species and ecosystems should not be so heavily exploited that they decline to levels or thresholds from which they cannot easily recover.

It is obvious that in contrast to the Stockholm Declaration the WCS had a clearer ecosystem focus. As I.V. Krjazh points out, the WCS builds on the

²⁹ MF Strong, 'One Year after Stockholm: An Ecological Approach to Management' (1973) 51(4) Foreign Affairs 691.

³⁰ World Conservation Strategy: Living Resource Conservation for Sustainable Development, IUCN–UNEP–WWF, 1980.

³¹ ibid foreword.

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Earth's limited resources and the carrying capacity of ecosystems as realities with which humanity must align its pursuit of economic development and the enjoyment of natural wealth. Therefore, on the one hand, it supports the development path set by the Stockholm Conference and, on the other hand, it introduces the notion of sustainable development that takes into account the limits of acceptable impacts on ecosystems.³²

By the way, the second edition of the WCS which is called as 'Caring for the Earth: A Strategy for Sustainable Living'³³ was published in October 1991. Its aim is to help improve the condition of the world's people, by defining two requirements. One is to secure a widespread and deeply held commitment to a new ethics, the ethic for sustainable living, and to translate its principles into practice. The other is to integrate conservation and development: conservation to keep our actions within the Earth's capacity, and development to enable people everywhere to enjoy long, healthy and fulfilling lives. The Strategy also defines the basic concepts of sustainable living, in particular 'sustainable development', which is interpreted as 'improving the quality of human life while living within the carrying capacity of supporting ecosystems'.

In the context of the protection and sustainable use of ecosystems the World Charter for Nature³⁴ (WCN), an international declarative document approved and proclaimed by United Nations General Assembly resolution 37/7 of 28 October 1982, deserves special attention. The WCN proclaims that: 'mankind is a part of nature and life depends on the uninterrupted functioning of natural systems which ensure the supply of energy and nutrients'; 'every form of life is unique, warranting respect regardless of its worth to man'; 'man can alter nature and exhaust natural resources by his action or its consequences and, therefore, must fully recognize the urgency of maintaining the stability and quality of nature and of conserving natural resources', because 'lasting benefits from nature depend upon the maintenance of essential ecological processes and life support systems' while 'the degradation of natural systems owing to excessive consumption and misuse of natural resources... leads to the breakdown of the economic, social and political framework of civilization'; and therefore 'man must acquire the knowledge to maintain and enhance his ability to use natural resources in a manner which ensures the preservation of the species and ecosystems for the benefit of present and future generations'.³⁵

Evaluating the above provisions, we can see that the WCN, although formally supporting the anthropocentric trends, as it also confirms the

³² IV Krjazh, Psihologija global'nyh jekologicheskikh izmenenij (Har'kov: HNU imeni V.N. Karazina 2012) 94.

³³ Caring for the Earth: A Strategy for Sustainable Living. Published in partnership by IUCN, UNEP, WWF (1991) <<https://portals.iucn.org/library/efiles/documents/cfe-003.pdf>> accessed 15 April 2021.

³⁴ World Charter for Nature (adopted and entered into force 28 October 1982) A/RES/37/7 (WCN).

³⁵ ibid preamble.

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importance of preservation of the species and ecosystems 'for the benefit of present and future generations', but in its essence, as M.O. Medvedieva noted, it is a clear example of the introduction of the concept of ecocentrism in the mechanism of international legal regulation because it is based on the recognition of the need to respect nature and ensure its reproduction (not because a human needs it).³⁶

To this end, the WCN enshrined five general principles conforming to which all human activities concerning nature should be directed and evaluated: 1) nature shall be respected and its essential processes shall not be impaired; 2) the genetic viability on the earth shall not be compromised; the population levels of all life forms must be at least sufficient for their survival, and to this end necessary habitat shall be safeguarded; 3) all areas of the Earth, both land and sea, shall be subject to these principles of conservation; special protection shall be given to unique areas, to representative samples of all the different types of ecosystems and to the habitat of rare or endangered species; 4) ecosystems and organisms, as well as the land, marine and atmospheric resources that are utilized by man, shall be managed to achieve and maintain optimum sustainable productivity, but not in such a way as to endanger the integrity of those other ecosystems or species with which they coexist; 5) nature shall be secured against degradation caused by warfare or other hostile activities. It should be noted that studying the principles of international law that apply to environmental relations, and referring to the 4th principle of the WCN, E.V. Vasilenko argues that it includes a definition of the concept of the ecosystem approach.³⁷

Thus, the analyzed documents were highly significant for the formation and development of the ecosystem approach in international environmental law. As D.K. Bekjashev notes referring to A.N. Vylegzhanin, 'these documents do not define the term 'ecosystem' and do not disclose the content of ecosystem management', but it was in the Stockholm Declaration and the WCN wherein the conceptual and legal framework of the ecosystem approach was first established.³⁸ A similar view is supported by O.M. Spektor, who, turning to D. Freestone, writes that the conceptual and legal framework for the ecosystem approach has been laid down in the texts of the Stockholm Declaration, the WCS and the WCN, although these terms do not apply.³⁹ D. Freestone himself speaks about it this way:

³⁶ MO Medvedieva, 'Pryntsypy ekolohichnoi etyky v mizhnarodni dohovirnii ta sudovii praktytsi' (2015) 124 (part I) Aktualni problemy mizhnarodnykh vidnosyn 69.

³⁷ EV Vasilenko, Formirovaniye mezhdunarodnogo prirodoresursnogo prava, Candidate's thesis (Rostov-na-Donu 2016) 52.

³⁸ DK Bekjashev, 'Mezhdunarodno-pravovoij princip jekosistemnogo podhoda v upravlenii rybolovstvom' (2016) 8(69) Aktual'nye problemy rossijskogo prava 183.

³⁹ OM Spektor, 'Klasyfikatsiia mizhnarodno-pravovykh rezhymiv pryrodnykh resursiv za predmetom yikh rehuliuvannia' (2016) 41(3) Naukovyi visnyk Uzhhorodskoho natsionalnoho universytetu. Series: Jurisprudence 160.

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"The recognition of the importance of management of ecosystems themselves, rather than simply those of their components which may be of immediate significance to mankind, is a relatively recent phenomenon. Crucial steps in this development were the 1972 Stockholm Declaration and the 1980 IUCN World Conservation Strategy which formed the basis for the 1982 UN General Assembly World Charter for Nature, and which popularized the concept of, as well as the term, 'life support systems' and which stressed the interrelationship of these with other ecological processes and genetic diversity."⁴⁰

4. PRIMACY IN THE REFLECTION OF THE ECOSYSTEM APPROACH

Since the early 1970s, agreements have begun to be concluded at the international level to protect not only separated species of flora and fauna (such as the so-called 'fish' conventions, conventions on the protection of birds and plants) or all species of flora and fauna and unique landscapes in a particular region (on the African continent, in the Western Hemisphere, etc.), but also the habitats of such species around the world.

A striking example of international environmental agreements of this type was adopted on 2 February 1971 in Ramsar (Iran) the Convention on Wetlands of International Importance Especially Waterfowl Habitat⁴¹ (Ramsar Convention) for *inter alia* stemming the progressive encroachment on wetlands and its conservation by combining far-sighted national policies with coordinated international action.⁴² Under this Convention, the List of Wetlands of International Importance has been created, where wetlands are designated for their international significance in terms of ecology, botany, zoology, limnology or hydrology. In the first instance, wetlands of international importance to waterfowl at any season should be included.⁴³

Exploring the history of the Ramsar Convention, M.N. Kopylov and A.M. Solncev indicate that in its development phase it was aimed specifically at the protection of waterfowl through the establishment of a network of protected areas, but as the text of the Convention improved, the protection of wetland habitats (rather than species) became a priority. In scientists' opinion, the unique feature of this Convention is that it is based on an ecosystem approach, as it not only aims to conserve waterfowl, but also recognizes wetlands as ecosystems that are critical to biodiversity

⁴⁰ D Freestone, 'The Conservation of Marine Ecosystems under International Law'. International Law and the Conservation of Biological Diversity. International Environmental Law and Policy Series. M. Bowman and C. Redgwell (eds). (London; Boston: Kluwer Law International 1996) 100.

⁴¹ Convention on Wetlands of International Importance Especially as Waterfowl Habitat (adopted 2 February 1971, entered into force 21 December 1975) 996 UNTS 245 (Ramsar Convention).

⁴² *ibid* preamble.

⁴³ *ibid* parts 1, 2 of art 2.

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conservation and human well-being.⁴⁴ In another publication M.N. Kopylov, S.M. Kopylov and S.A. Mohammad also claim that this Convention was the first international environmental treaty to set standards for the conservation of a specific type of ecosystem.⁴⁵ This position is shared by O.M. Spektor noting that the Ramsar Convention is one of the first treaty sources of international law in the doctrine to provide for the protection of ecosystems.⁴⁶ Indeed, despite the fact that the Ramsar Convention text does not mention not only the ecosystem approach but also the term 'ecosystem' itself, it is obvious that it is an international legal instrument of an ecosystem essence, which is dedicated to the protection of living organisms (primarily waterfowl) in their inextricable link with their habitats (wetlands).

Some authors, among whom O. McIntyre⁴⁷ and M. Erdem,⁴⁸ researching the emergence of the ecosystem approach in the law of international watercourses, insist that one of the first agreements to reflect the concept of ecosystem integrity was the Great Lakes Water Quality Agreement⁴⁹ (GLWQA) signed at Ottawa (Canada) on 22 November 1978 between the United States of America and Canada to 'restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem'.⁵⁰ It seems that this statement is true, since the GLWQA already broadly uses the term 'ecosystem' and defines it appropriately, indicating that 'Great Lakes Basin Ecosystem' means the interacting components of air, land, water and living organisms, including man, within the drainage basin.⁵¹

However, while many scientists rightly give the Ramsar Convention and the GLWQA primacy in the reflection of the ecosystem approach, the literature provides information on the existence of earlier examples of its recognition. One of them is Declaration on the Maritime Zone⁵² (Santiago Declaration) signed on 18 August 1952 by the governments of Chile, Ecuador and Peru. This Declaration constituted an unequivocal expression of rights

⁴⁴ Kopylov/Solncev (n. 14).

⁴⁵ MN Kopylov, SM Kopylov and SA Mohammad, 'Kak formirovalas' funkcija upravlenija OON v oblasti ohrany okruzhajushhej sredy' (2013) 4 Vestnik RUDN. Serija Juridicheskie nauki 304.

⁴⁶ O Spektor, 'Mizhnarodne upravlinnia povodzhennia z zhivymy pryrodnymy resursamy' (2018) 9 Pidpriemnytstvo, hospodarstvo i pravo 277.

⁴⁷ McIntyre (n. 13) 3.

⁴⁸ Erdem (n. 13) 1364.

⁴⁹ Agreement on Great Lakes Water Quality (adopted and entered into force 22 November 1978) 1153 UNTS 187 (GLWQA).

⁵⁰ Ibid art 2.

⁵¹ Ibid art 1.

⁵² Declaration on the maritime zone (adopted and entered into force 18 August 1952) 1006 UNTS 326 (Santiago Declaration).

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of sovereignty over a 200 mile maritime zone and, additionally, has become a cornerstone of the new law of the sea.⁵³

Thus, as 'a norm of their international maritime policy', these governments declared that each of them possesses 'exclusive sovereignty and jurisdiction' over the sea along the coasts of their respective countries to a minimum distance of 200 nautical miles from these coasts, including the seabed and the subsoil thereof. This was the first attempt to give 'international' character to unilateral actions aimed at reviewing existing law. The actions taken by those countries explained the duty of governments to preserve and ensure for their peoples the natural resources of the maritime zones adjacent to their coasts.⁵⁴

Giving the rationale for the Santiago Declaration, A.V. Ovashchenko and I.F. Pokrovskij note that Latin American ecologists and lawyers have suggested that the biome of the Central Peru, the warm water biome of the Ecuador and the cold-water biome of the North Chile region are located in the Peruvian Current zone within the ecosystem. Their western borders are more distant from the Chilean coast than from Ecuador, but on average they are 200 miles wide. This is, in a nutshell, the concept of biological unity that Chile, Peru and Ecuador have justified in favour of the coastal state. Under this concept, people living on the coast also form part of the biological chain that begins at sea. By biological complex, the biome in Peru was first understood as a very prosaic thing, which is difficult to imagine as the basis for the subsequent 'global' ecosystem approach, namely the biological chain 'anchovy - cormorants - guano'. The decline in anchovy stocks as a result of overfishing led to a reduction in bird stocks and, consequently, in the number of guanos collected in large quantities on Peru's coastal islands. Later, Chile, Ecuador and Peru expanded the concept of biome to include a range of living organisms in selected areas.⁵⁵

Scientists continue that the ecosystem model proposed in the Declaration, which justified the claims of States to extend sovereignty to areas of the high seas, was not initially widely supported. As international law of the sea expert A.A. Volkov wrote on this occasion in 1966: 'Understanding the precariousness... of the rationale for any violation of the international legal principle of freedom of the high seas, the states that signed the Santiago Declaration of 1952 have also put forward scientific arguments to defend their position. The concept of an ecosystem was used

⁵³ A Espalat Larson, *The maritime boundary Chile–Peru* (Corporación de Estudios Internacionales, 2012) 9 <<http://repositorio.uchile.cl/handle/2250/123727?show=full>> accessed 15 April 2021.

⁵⁴ Slovar' mezhdunarodnogo morskogo prava. Ju.G. Barsegov (ed.). (Moscow: Mezhdunarodnye otnoshenija 1985) 51.

⁵⁵ AV Ovashchenko and IF Pokrovskij, 'Ispol'zovanie jekosistemnogo podhoda v morskoj dejatel'nosti: pravovye voprosy i ih diskussionnye momenty' (2010) <<https://wiselawyer.ru/poleznoe/42278-ispolzovanie-ehkosistemnogo-podkhoda-morskoy-dejatelnosti-pravovye-voprosy>> accessed 15 April 2021.

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for this'.⁵⁶ But, as scientist further pointed out, in the substantiation of the theory of 'biome' prevailed arguments, which are mainly of economic nature and have nothing to do with the peculiarities of biology of living marine organisms living off the western coast of South America. At that time, the application of the ecosystem concept in practice would have divided many areas of the high seas between different states. For this reason, the concept of the ecosystem could not find support from the vast majority of States at the International Technical Conference on the Conservation of the Living Resources of the Sea (18 April - 10 May 1955, Rome, Italy). It was not recognized outside individual Latin American countries or at a later time. The concept of the ecosystem sparked a strong protest outside South America.⁵⁷ 'The practical implementation of the concept of ecosystem by Latin American countries', as A.A. Volkov pointed in the conclusion of his article, 'is a flagrant violation of universally recognized principles of international law'.⁵⁸

Another prominent international lawyer M.I. Lazarev wrote on this occasion that the struggle for marine ecological balance should be conducted by all States with all certainty and with the help of political, administrative, legal and other measures. However, all these measures do not in any way mean that the ecology of the sea becomes the imperative for international maritime law. And, while issues of the environment and its protection have a very important role to play, neither quantitatively nor qualitatively will rules concerning the protection of the marine environment prevail over rules governing the political relations of States with respect to the use of the seas and oceans. The proposal to make 'the ecology of the sea the basis of the law of the sea' is scientifically untenable. This proposal attempts to replace the political basis of the law with an environmental one, which is totally unrealistic and should be rejected.⁵⁹

Nevertheless, it should be noted that over time the situation will change, and the ecological basis will affect the political one, and the concept of the ecosystem will occupy an important place in the legal regulation of international maritime relations.

5. THE ECOSYSTEM APPROACH TO MARITIME RELATIONS

A fundamental treaty in maritime relations is the United Nations Convention on the Law of the Sea⁶⁰ (UNCLOS), which was opened for

⁵⁶ AA Volkov, 'Koncepcija jekosistemy i mezhdunarodnoe morskoe pravo' (1966) 3 Rybnoe hozjajstvo 88 in Ovlashhenko/Pokrovskij (n. 55).

⁵⁷ ibid.

⁵⁸ ibid.

⁵⁹ MI Lazarev, *Morskaja jekologija i mezhdunarodnoe morskoe pravo (Kritika odnoj burzhuaznoj koncepcii)* (Moscow: IGPAN SSSR 1972) 183–185 in Ovlashhenko/Pokrovskij (n. 55).

⁶⁰ United Nations Convention on the Law of the Sea (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 397 (UNCLOS).

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signature on 10 December 1982. It established the legal regime and boundaries of the maritime spaces that are part of State territory, and the spaces forming zones of functional jurisdiction of States, as well as provided the legal framework for the activities of States in the study and use of the seas and oceans and their resources, including navigation and overflight, mineral exploration and mining, fishing, conservation and protection.

In studying the UNCLOS in the context of practice for an ecosystem approach to the sustainable use of the sea and its resources, A. Luttenberger notes that it provides legal framework for the implementation of an ecosystem approach to all activities conducted in maritime areas. And to confirm this thesis, the scientist refers to the relevant provisions of the UNCLOS. Firstly, he points out to the preamble, which declares that the problems of ocean space are closely interrelated and need to be considered as a whole. Secondly, he cites part 4 of article 61 of the UNCLOS 'Conservation of the living resources', according to which the coastal State shall take into consideration the effects on species associated with or dependent upon harvested species with a view to maintaining or restoring populations of such associated or dependent species above levels at which their reproduction may become seriously threatened. And, thirdly, he focuses on article 119 which contains analogous wording.⁶¹

A similar opinion is expressed by D.K. Bekjashev, who says that the UNCLOS does not contain the concept of an ecosystem approach, but it stresses the need to take action to protect vulnerable ecosystems. It requires States parties to take all necessary measures to conserve and protect the marine environment and to manage its resources through the interdependence of species (articles 61–67, 119). In general, these norms establish the application of an ecosystem approach to fisheries management.⁶²

The authors of the publication 'On the Ecosystem Approach to the World Ocean Development' also emphasize that, despite the absence of the ecosystem approach in the UNCLOS, it highlights the need to take action to protect vulnerable ecosystems. In addition, it provides the legal framework for the implementation of the ecosystem approach to all activities carried out in marine areas. The basic principles for the protection and conservation of the marine environment require States to protect all areas of the oceans from pollution from any source and to take special measures for rare or vulnerable

⁶¹ A Luttenberger, 'Legal challenges of ecosystem approach to sustainable use of the sea'. UNESCO sponsored 4rd Dubrovnik Conference on Sustainable Development of Energy, Water and Environment Systems, Faculty of Mechanical Engineering and Naval Architecture (2007) <https://bib.irb.hr/datoteka/273818.ILuttenberger_Regulations_on_discharge_of_waste_and_cargo_residues.pdf> accessed 15 April 2021.

⁶² Bekjashev (n. 38) 185.

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ecosystems and habitats of depleted, threatened or endangered fish species and other forms of marine organisms.⁶³

At the same time, it should be noted that there are also opposing views on this issue in the scientific literature. M.Yu. Bezdienezhna, for example, notes that the UNCLOS does not contain clear obligations to protect marine ecosystems and provides for the 'maximum sustainable yield' approach based on the protection of only one species. Although the UNCLOS refers to associated species (article 119), it does not provide a clear mechanism for putting these provisions into practice. Obviously, the researcher continues, it was not the goal of lawmakers to explicitly enshrine ecosystem management in this Convention and, for objective reasons, lack of sufficient knowledge about the subtle ecosystem links between ecosystem components. Since, in theory, such management should take into account all possible relationships between a particular fish resource and predators, other similar species and their own prey; the impact of weather and climate on fish resources; and the complex relationship between fish resources and their natural environment.⁶⁴

P.A. Gudev also notes that the ecosystem approach has never been part of the UNCLOS. Attempts to attribute an 'ecosystem' orientation to the UNCLOS can only be seen as speculative. It has only one article that mentions the term 'ecosystem' itself. This is article 194(5) on measures to prevent, reduce and control pollution of the marine environment, which states: 'The measures taken in accordance with this Part shall include those necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life'. Among other things, the implementation of the ecosystem approach requires the mandatory application of the same measures for the protection of the marine environment and marine living resources both within and beyond the areas of national jurisdiction of coastal States. However, the realization of the ecosystem approach contradicts the zonal approach, which divides the oceans into different spatial zones and which, in turn, is the basis of the UNCLOS.⁶⁵

Indeed, in the UNCLOS the ecosystem component can only be traced to a formal obligation of States to protect and preserve rare or vulnerable ecosystems. Nonetheless, it should not be forgotten that this Convention was adopted at the Third United Nations Conference on the Law of the Sea (1973–1982), the main impetus to the convening of which was the speech by the Malta's Ambassador to the United Nations A. Pardo in 1967 at the session of

⁶³ Teoriya i praktika morskoy dejatel'nosti. Serija nauchnyh publikacij pod redakcijej prof. G.K. Vojtolovskogo. Issue 18. Mezhdunarodnye uslovija. G.E. Gigolaev, P.A. Gudev (eds). (Moscow: SOPS 2010) 183.

⁶⁴ MYu Bezdienezhna, 'Zastosuvannia ekosistemnoho pidkhodu do rehuliuvannia rybnykh resursiv' (2013) 2 Ukrainskyi chasopys mizhnarodnoho prava 97.

⁶⁵ PA Gudev, *Konvencija OON po morskому pravu: problemy transformacii rezhima* (Moscow: IMJeMO RAN 2014) 148–149, 150.

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the United Nations General Assembly, where he called on countries to open their eyes to the impending conflict that could endanger the very existence of humankind and destroy the oceans. He cited the lack of regulation of relations in the maritime domain as the cause of such conflict. This speech came at a time when many people recognized the need to renew the doctrine of the freedom of the high seas, which did not take into account scientific and technological progress that had changed the way people treated the sea.⁶⁶

Thus, the main purpose of the UNCLOS, as reported by P.A. Gudev himself, was to develop a new spatial and legal hierarchy of the World Ocean,⁶⁷ while the ecosystem component of the Convention has been overshadowed and expressed only in a few provisions. Although, on the other hand, comparing this Convention with the Geneva Conventions on the Law of the Sea⁶⁸ signed on 29 April 1958, which, according to T. Treves, are the expressions of the ‘traditional law of the sea’ and the importance of them is currently mostly historical,⁶⁹ some progress in that direction can be traced, as the Geneva Conventions do not contain any articles at all on the protection and conservation of marine ecosystems. Furthermore, on 4 August 1995 the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks⁷⁰ was adopted, in which the issues of protection and conservation of marine ecosystems were continued.

Within the framework of the maritime theme also note that in order to develop the strengthening and improvement of the legal regime for the protection of the marine environment, the Convention on the Protection of the Marine Environment of the Baltic Sea Area⁷¹ (Helsinki Convention) was adopted on 9 April 1992 in Helsinki (Finland), and on 21 April 1992 in Bucharest (Romania) the Convention on the Protection of the Black Sea

⁶⁶ EA Grin' and AS Malimonova, 'Iskusstvennye zemel'nye uchastki v mezhdunarodnom prave: Konvencija OON po morskому pravu' (2017) 132 (08) Nauchnyj zhurnal KubGAU 5.

⁶⁷ Gudev (n. 65) 21.

⁶⁸ Convention on the Territorial Sea and the Contiguous Zone; Convention on the High Seas; Convention on Fishing and Conservation of the Living Resources of the High Seas; Convention on the Continental Shelf.

⁶⁹ T Treves, '1958 Geneva Conventions on the Law of the Sea' (2008) United Nations Audiovisual Library of International Law 3.

⁷⁰ Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (adopted 4 August 1995, entered into force 11 December 2001) 2167 UNTS 3 (United Nations Fish Stocks Agreement).

⁷¹ Convention on the Protection of the Marine Environment of the Baltic Sea Area (adopted 9 April 1992, entered into force 17 January 2000) 1507 UNTS 166 (Helsinki Convention).

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Against Pollution⁷² (Bucharest Convention) was signed. The Helsinki Convention obliges the Contracting Parties to take preventive measures when there is reason to assume that substances or energy introduced into the marine environment may create hazards to human health, and harm the living resources and marine ecosystems,⁷³ and also individually and jointly to take all appropriate measures with respect to the Baltic Sea Area and its coastal ecosystems influenced by the Baltic Sea to conserve natural habitats and biological diversity and to protect ecological processes.⁷⁴ Similar obligations are contained in the Bucharest Convention to prevent, reduce and control pollution, thereof, in order to protect and preserve the marine environment of the Black Sea.⁷⁵

Assessing the Bucharest Convention, V. Velikova, S. Vinogradov and M. Gvilava note that its provisions are general and vague. There is virtually no reference to such popular environmental law principles and concepts as the precautionary principle, sustainable development, ecosystem approach, etc. The document is not relevant, as its focus is on pollution prevention and control, which does not fully reflect today's environmental imperatives, such as integrated marine and coastal area management and biodiversity protection, including the sustainable use of marine living and mineral resources. Some of the obvious gaps and shortcomings of the Bucharest Convention were addressed through the adoption of the Black Sea Biodiversity and Landscape Conservation Protocol in 2002.⁷⁶

This comment should be accepted because the Bucharest Convention hardly reflects an ecosystem approach. However, going beyond the scope of our research, we confirm that ecosystem approach, indeed, is already clearly seen in the Black Sea Biodiversity and Landscape Conservation Protocol to the Bucharest Convention⁷⁷ adopted on 14 June 2002, as its purpose is recognized to maintain the Black Sea ecosystem in the good ecological state.⁷⁸ The Protocol also fixes the obligations to prohibit all actions that may have harmful impacts on the ecosystems,⁷⁹ to implement measures to eradicate or reduce to an possible level species that have already been introduced when it appears that such species cause or are potentially causing damage to

⁷² Convention on the Protection of the Black Sea Against Pollution (adopted 21 April 1992, entered into force 15 January 1994) 1764 UNTS 3 (Bucharest Convention).

⁷³ Helsinki Convention part 2 of art 3.

⁷⁴ ibid art 15.

⁷⁵ Bucharest Convention part 2 of art 5.

⁷⁶ Nauchnoe obespechenie sbalansirovannogo planirovaniya hozjajstvennoj dejatel'nosti na unikal'nyh morskikh beregovyh landshaftah i predlozhenija po ego ispol'zovaniju na primere Azovo-Chernomorskogo poberezh'ja. R.D. Kos'jan (ed.), vol. 9. Gelendzhik (2013) 1345–1346 <https://coastdyn.ru/e-lib/tom09_2013.pdf> accessed 15 April 2021.

⁷⁷ Black Sea Biodiversity and Landscape Conservation Protocol to the Convention on the Protection of the Black Sea against Pollution (adopted 14 June 2002, entered into force 20 June 2011) (Black Sea Biodiversity Protocol) <www.blacksea-commission.org/_convention-protocols-biodiversity.asp> accessed 15 April 2021.

⁷⁸ ibid part 1 of art 1.

⁷⁹ ibid part 1 of art 5.

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ecosystems,⁸⁰ to refrain from action, which endanger the ecosystems or the biological processes contributing to the maintenance of those ecosystems.⁸¹

The last international agreement that we will pay a little bit of attention to as part of the study of the ecosystem approach to maritime relations is the Convention for the Protection of the Marine Environment of the North-East Atlantic⁸² (OSPAR Convention) which was concluded in Paris (France) on 22 September 1992 on the basis of the recognition of the need to manage 'human activities in such a manner that the marine ecosystem will continue to sustain the legitimate uses of the sea and will continue to meet the needs of present and future generations',⁸³ and with purpose to 'take the necessary measures to protect the maritime area against the adverse effects of human activities so as to safeguard human health and to conserve marine ecosystems'.⁸⁴ In 1998, to the OSPAR Convention a new Annex V 'On the Protection and Conservation of the Ecosystems and Biological Diversity of the Maritime Area' was adopted which obligates Contracting Parties to 'take the necessary measures to protect and conserve the ecosystems and the biological diversity of the maritime area, and to restore, where practicable, marine areas which have been adversely affected'.⁸⁵

6. THE ECOSYSTEM APPROACH TO THE ARCTIC AND ANTARCTIC

The Arctic region, which covers much of Earth's northern pole, is a unique and one of the most biologically productive ecosystems in the world with a complex food web made up of organisms adapted to its extreme conditions. It sits at the top of world, covered in sea ice - a seemingly unwelcome place for life. Yet the Arctic is actually teeming with wildlife, from large mammals like walruses and polar bears to birds, fish, small plants, and even tiny ocean organisms called plankton. In addition, this region is vital to the identity, culture, and survival of its Indigenous people.⁸⁶

The importance of the Arctic ecosystem protection is mentioned in Agreement on the Conservation of Polar Bears⁸⁷ signed by the States of the Arctic Region in Oslo (Norway) on 15 November 1973. This Agreement obliges each Contracting Party to take appropriate action to protect the ecosystems of which polar bears are a part, with special attention to habitat

⁸⁰ ibid part 2 of art 5.

⁸¹ ibid para 'a' of part 1 of art 8.

⁸² The Convention for the Protection of the Marine Environment of the North-East Atlantic (adopted 22 September 1992, entered into force 25 March 1998) 2354 UNTS 67 (OSPAR Convention).

⁸³ ibid preamble.

⁸⁴ ibid part 1(a) of art 2.

⁸⁵ ibid art 2 of Annex V.

⁸⁶ The Arctic. The National Wildlife Federation <www.nwf.org/Educational-Resources/Wildlife-Guide/Wild-Places/Arctic> accessed 15 April 2021.

⁸⁷ Agreement on the Conservation of Polar Bears (adopted 15 November 1973, entered into force 26 May 1976) 2898 UNTS 243 (ACPB).

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components such as denning and feeding sites and migration patterns, and to manage polar bear populations in accordance with sound conservation practices based on the best available scientific data.⁸⁸

In September 1989, officials from the eight Arctic countries met in Rovaniemi (Finland) to discuss cooperative measures to protect the Arctic environment.⁸⁹ As a result of numerous subsequent meetings and discussions, on 14 June 1991 the Arctic Environmental Protection Strategy (AEPS) and the Declaration on the Protection of the Arctic Environment (Rovaniemi Declaration) were formally adopted, and which are fully consistent with the ecosystem approach. According to the AEPS, its first objective is 'to protect the Arctic ecosystem including humans',⁹⁰ while among the principles under which the implementation of the AEPS is envisaged are the following: i) management, planning and development activities shall provide for the conservation, sustainable utilization and protection of Arctic ecosystems for the benefit and enjoyment of present and future generations, including Indigenous peoples; ii) management of natural resources shall be based on an approach which considers the value and interdependent nature of ecosystem components, etc.⁹¹

In support of the AEPS and with the aim of protection and preservation of the Arctic environment on 16 September 1993 the Nuuk Declaration on Environment and Development in the Arctic⁹² (Nuuk Declaration) was adopted in Nuuk (Greenland). It acknowledges that the Arctic environment consists of ecosystems with unique features and resources which are especially slow to recover from the impact of human activities, and therefore there is a need for cooperation for the conservation, protection and restoration of ecosystems. Considering this the Ministers of the Arctic Countries endorsed the Conservation of Arctic Flora and Fauna (CAFF) as a demonstration of international cooperation for conservation and sustainable use of Arctic resources using an ecosystem approach and encouraged CAFF's continuation of the ecosystem approach as a basis for promoting more effective conservation of Arctic resources.

Turning to the Antarctic ecosystem, it worth noting that as a part of the Antarctic Treaty System, based on the Antarctic Treaty (1959),⁹³ on 1 June

⁸⁸ ibid art II.

⁸⁹ Arctic Environmental Protection Strategy (adopted 14 June 1991) (AEPS)
<http://library.arcticportal.org/1542/1/artic_environment.pdf> accessed 15 April 2021.

⁹⁰ ibid 2.1 'i'.

⁹¹ ibid 2.2.

⁹² The Nuuk Declaration on Environment and Development in the Arctic (adopted 16 September 1993) (Nuuk Declaration)
<<https://iea.uoregon.edu/MarineMammals/engine/Documents/1-0279-0287.htm>>
accessed 15 April 2021.

⁹³ The Antarctic Treaty (adopted 1 December 1959, entered into force 23 June 1961) 402 UNTS 71 (Antarctic Treaty).

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1972 the Convention on the Conservation of Antarctic Seals⁹⁴ was adopted in London (Great Britain) for the protection, scientific study and rational use of Antarctic seals, as well as to maintain a satisfactory balance of the ecological system. It contains the obligations of Contracting Parties to report on the basis of the statistical, biological and other evidence available when the harvest of any species of seal in the Convention area is having a significantly harmful effect on the total stocks of such species or on the ecological system in any particular locality.⁹⁵

On 20 May 1980 also within the framework of the Antarctic Treaty System in Canberra (Australia) the Convention on the Conservation of Antarctic Marine Living Resources⁹⁶ (Canberra Convention, or CAMLR Convention) was adopted. From the beginning, this Convention had a clear ecosystem focus, because a key role in its creation was concern that increased catch of krill in the Southern Ocean could seriously affect populations of krill and other marine animals, particularly birds, seals and fish, for which krill are a major source of food.⁹⁷

As reported by I.P. Dudykina, foreign legal scholars correctly consider the Canberra Convention as the 'model' international agreement that provides for an ecosystem approach to the conservation of living natural resources. D. Freestone, for example, qualifies the marine biological resources regime, established by the Convention as a 'model of an environmental (ecological) approach'. Indeed, already in the preamble of the Convention the importance of 'protecting the integrity of the ecosystem of the seas surrounding Antarctica' and increasing 'knowledge of the Antarctic marine ecosystem and its components' are recognized. Unlike the Antarctic Treaty 1959, the area of which lies between the South Pole and the 60° South latitude, the Canberra Convention extends to that area and beyond, attributing to 'Antarctic marine living resources' located in the area between the said parallel and the line of 'Antarctic convergence' (part 1 of article I).⁹⁸

Pursuant to the Canberra Convention 'Antarctic marine ecosystem' means the complex of relationships of Antarctic marine living resources (the populations of fin fish, molluscs, crustaceans and all other species of living organisms, including birds, found south of the Antarctic Convergence) with

⁹⁴ Convention on the Conservation of Antarctic Seals (adopted 1 June 1972, entered into force 11 March 1978) 1080 UNTS 175 (CCAS).

⁹⁵ ibid preamble and part 4 of art 5.

⁹⁶ Convention on the Conservation of Antarctic Marine Living Resources (adopted 20 May 1980, entered into force 7 April 1982) 1329 UNTS 47 (Canberra Convention, or CAMLR Convention).

⁹⁷ Antarkticheskij kril'. Istorija sozdaniija ANTKOM. Kratkij obzor (ZAO 'Russkaja pelagicheskaja issledovatel'skaja kompanija') (2011) <<http://ruspelagic.ru/d/290162/d/5142355.pdf>> accessed 15 April 2021.

⁹⁸ IP Dudykina, 'Zarubezhnye analitiki o sovershenstvovanii mezhdunarodno-pravovyh mehanizmov jekosistemnogo upravlenija v Arktike' (2016) 2 Moskovskij zhurnal mezhdunarodnogo prava 97.

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each other and with their physical environment.⁹⁹ As V.V. Golicyn and A.V. Ovlashhenko rightly note, there is perhaps no area on Earth that is more fragile and sensitive to the ecological balance than Antarctica. The Antarctic ecosystem is particularly vulnerable to changes in environmental conditions or the scale of resource exploitation, as it is extremely difficult to remove contaminants or regenerate organisms that have been damaged. For the oceanic waters around the Antarctic continent, scientists continue, a projected increase in sea temperature of just 2–3 °C over the next 100 years would mean the loss of many valuable marine biological resources. It is therefore no coincidence that the Canberra Convention has pioneered an ecosystem approach to conserving living natural resources. The novelty and uniqueness of the Convention lies primarily in its construction based on the so-called ecosystem approach. The Convention was the first international agreement for the conservation and sustainable use of marine living resources based on this approach, which is universally accepted today.¹⁰⁰

The Canberra Convention defines the principles for the conservation of marine living resources under which fisheries and related activities should be carried out: (a) prevention of decrease in the size of any harvested population to levels below those which ensure its stable recruitment; (b) maintenance of the ecological relationships between harvested, dependent and related populations of Antarctic marine living resources and the restoration of depleted populations; and (c) prevention of changes or minimization of the risk of changes in the marine ecosystem which are not potentially reversible over two or three decades, taking into account the state of available knowledge of the direct and indirect impact of harvesting, the effect of the introduction of alien species, the effects of associated activities on the marine ecosystem and of the effects of environmental changes, with the aim of making possible the sustained conservation of Antarctic marine living resources.¹⁰¹ All of the above article and the Canberra Convention as a whole, as noted by N.N. Kuharev, Ju.V. Korzun and N.N. Zhuk, turned out to be focused on the issues of fisheries regulation with the condition of maximum conservation of the Antarctic ecosystem. This is the first time in world fisheries management practice that such a focus has been declared an ecosystem approach to fisheries management.¹⁰²

The essential ecosystem component of the Canberra Convention was also highlighted by V. De Lucia,¹⁰³ and S.R. Enright and B. Boteler, who quoted him, pointing out that this Convention is a good illustration of the

⁹⁹ Canberra Convention art I.

¹⁰⁰ VV Golicyn, AV Ovlashhenko, 'Mezhdunarodno-pravovoj rezhim Antarktiki' in Mezhdunarodnoe pravo: uchebnik. N. Vylegzhinanin (ed.) (Moscow: Vysshie obrazovanie, Jurajt-Izdat 2009) 221–222.

¹⁰¹ Canberra Convention part 3 of art II.

¹⁰² NN Kuharev, JuV Korzun and NN Zhuk, 'Ob jekosistemnom podhode ANTKOM k upravleniju promyslom Antarkticheskogo krilja (obzor)'(2017) 54 Trudy JugNIRO 42.

¹⁰³ V De Lucia, 'Competing narratives and complex genealogies: The ecosystem approach in international environmental law' (2015) 27 Journal of Environmental Law 107–108.

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ecosystem approach in action via its incorporation of basic principles of ecosystem ecology, its recognition of the importance of ecosystem interrelationships and its focus on the various components of the marine ecosystem.¹⁰⁴

The Canberra Convention established the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) headquartered in Hobart (Australia) to conserve Antarctic marine ecosystems using an ecosystem approach to their management. This management does not preclude research and commercial fisheries for marine living resources, but it is managed on the condition that fishing is ongoing and takes into account the impact of fishing on other ecosystem components.

Analyzing the Canberra Convention, D.K. Bekjashev writes that it was the first international treaty to establish an ecosystem approach to fisheries management. To confirm this, he cites the words of V.V. Golicyn, who believes that the marine biological resources regime established by this Convention represents a new model for the environmental approach, as well as the views of the authors of the book ‘CCAMLR – Approach to Management’, who note that unlike other multilateral fisheries agreements, the Convention not only regulates fisheries, but is also responsible for ecosystem conservation. This ‘ecosystem approach’, which sees the entire Southern Ocean as a set of interconnected ecosystems, distinguishes the Convention from other multilateral fisheries agreements.¹⁰⁵ These same authors note that CCAMLR was one of the first to develop what later became known as the ‘ecosystem approach’ to fisheries management. This approach does not focus exclusively on the species being targeted, but also sought ways to avoid situations in which fisheries adversely affected ‘dependent and associated species’, i.e. animals with which humans compete for food resources. CCAMLR’s approach is to regulate human activities (i.e. fishing) so that harmful changes to the Antarctic ecosystem can be avoided.¹⁰⁶

Similar wording is contained in another publication ‘CCAMLR – Antarctic Management’ which notes that, the following two concepts have evolved from the Canberra Convention principles, which are key to the CCAMLR approach to management: (i) management should be based on precautionary approach, and (ii) management follows an ecosystem approach (i.e. all subtle and complex relationships between all organisms and physical processes (such as currents, sea temperature) that make up the Antarctic marine ecosystem must be considered). Given the complexity of the ecosystem approach, it is not surprising that multilateral fisheries conventions and fisheries managers have largely ignored this approach, instead focusing on the management of target species. The CCAMLR’s

¹⁰⁴ Enright/Boteler (n. 13) 340.

¹⁰⁵ Bekjashev (n. 38) 184.

¹⁰⁶ ANTKOM – Podhod k upravleniju. K-G Kok (ed.) (2000) 11, 12

<<http://archive.ccamlr.org/pu/r/pubs/am/text.pdf>> accessed 15 April 2021.

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ecosystem approach focuses not only on regulating fisheries for individual species, but also to ensure that fisheries do not adversely affect other species that are dependent on or associated with the target species. For example, while there is direct monitoring and management of krill fisheries, CCAMLR also seeks to monitor the possible impact of these fisheries on krill feeders and associated species. In this way, the CCAMLR seeks to maintain a healthy ecosystem by establishing protective limits on krill catches that take into account the needs of the linked species in order to ensure their ecological sustainability. CCAMLR's pioneering work on precautionary and ecosystem approaches provides an example for fisheries organizations around the world.¹⁰⁷

Continuing the theme of protection of the Antarctic ecosystem, it should be mentioned that on 4 October 1991 in Madrid (Spain) the Protocol on Environmental Protection to the Antarctic Treaty¹⁰⁸ (also known as the Antarctic-Environmental Protocol, or the Madrid Protocol) was signed, which entrusted the Parties with the responsibility for comprehensive protection of the Antarctic environment and dependent and associated ecosystems, and also proclaimed Antarctica as a natural reserve, devoted to peace and science.¹⁰⁹

7. THE ECOSYSTEM APPROACH TO CONSERVATION OF WILDLIFE, ATMOSPHERE, MOUNTAINS AND WATERCOURSES

Some ecosystem aspects are provided for in international environmental agreements dedicated to wildlife conservation. Thus, on 3 March 1973 in Washington (D.C., USA) the Convention on International Trade in Endangered Species of Wild Fauna and Flora¹¹⁰ (Washington Convention, or CITES) was signed. The main purpose of this Convention is to combat illegal catch and trade in wild animals and plants, because wild fauna and flora in their many beautiful and varied forms are an irreplaceable part of the natural systems of the Earth, which must be protected for this and the generations to come.¹¹¹

In keeping with the CITES, wild flora and fauna species are classified into three groups (appendices), which include: species threatened with extinction, and any trade in specimens of these species must be subject to

¹⁰⁷ ANTKOM – upravlenie Antarktikoj (Hobart: ANTKOM) (2001) 7–8
<www.ccamlr.org/ru/system/files/MgmtOfTheAntarctic_ru.pdf> accessed 15 April 2021.

¹⁰⁸ Protocol on Environmental Protection to the Antarctic Treaty (adopted 4 October 1991, entered into force 14 January 1998) 2941 UNTS 3 (Antarctic-Environmental Protocol, or Madrid Protocol).

¹⁰⁹ Antarctic-Environmental Protocol art 2.

¹¹⁰ Convention on International Trade in Endangered Species of Wild Fauna and Flora (adopted 3 March 1973, entered into force 1 July 1975) 993 UNTS 243 (Washington Convention, or CITES).

¹¹¹ ibid preamble.

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particularly strict regulation;¹¹² species which although not necessarily now threatened with extinction may become so unless trade in specimens of such species is subject to strict regulation;¹¹³ species which any Party identifies as being subject to regulation for the purpose of preventing or restricting exploitation, and as needing the cooperation in the control of trade.¹¹⁴ As for the protection of ecosystems, the Convention contains some comments on trade in specimens of fauna and flora species listed in Appendix II. It is stated that Scientific Authority of each Party shall monitor both the export permits granted by that State for specimens of species included in Appendix II and the actual exports of such specimens. Whenever a Scientific Authority determines that the export of specimens of any such species should be limited in order to maintain that species throughout its range at a level consistent with its role in the ecosystems in which it occurs, the Scientific Authority shall advise the appropriate Management Authority of suitable measures to be taken to limit the grant of export permits for specimens of that species.¹¹⁵

As M.N. Kopylov and K.A. Merkulova, who analyzed the above provisions of the CITES, claimed, the need to prohibit or strictly control wildlife hunting at a level that enables them to re-establish their populations is one of the generally accepted rules in international environmental law, and in particular as it relates to biota conservation. In modern international environmental law, this rule is embodied in the concept of sustainable development and ecosystem management.¹¹⁶

The next international agreement on the conservation of animal species and their habitats is the Convention on the Conservation of Migratory Species of Wild Animals¹¹⁷ (Bonn Convention, or CMS) adopted on 23 June 1979 in Bonn (Germany), in which the Contracting Parties recognized that wild animals in their innumerable forms are an irreplaceable part of the Earth's natural system that must be conserved for the good of mankind, while among the fundamental principles for achieving this goal is taking appropriate and necessary steps to conserve not only species, but also their habitats. Describing the provisions of the Bonn Convention from the perspective of the ecosystem approach, M.S. Cipris notes that it takes ecosystems into account and thus considers species in their ecosystem context, and also pays special attention on exploring the relationship between the ecosystem approach and the sustainable use and conservation

¹¹² ibid Appendix I.

¹¹³ ibid Appendix II.

¹¹⁴ ibid Appendix III.

¹¹⁵ ibid part 3 of art IV.

¹¹⁶ MN Kopylov and KA Merkulova, 'K 40-letiju Vashingtonskoj konvencii o mezhdunarodnoj torgovle vidami dikoj fauny i flory, nahodjashhimisja pod ugrozoy ischeznenenija' (2013) 3 Vestnik RUDN. Serija Juridicheskie nauki 291.

¹¹⁷ Convention on the Conservation of Migratory Species of Wild Animals (adopted 23 June 1979, entered into force 1 November 1983) 1651 UNTS 333 (Bonn Convention, or CMS).

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of migratory species of wild animals, taking into account the approach based on the migratory-areal zoning.¹¹⁸

On 9 July 1985 in Kuala Lumpur (Malaysia) the countries of the Association of Southeast Asian Nations (ASEAN) concluded the first regional international treaty, the Agreement on the Conservation of Nature and Natural Resources¹¹⁹ which provides the obligation of the Contracting Parties to take measures to ensure the sustainability of life support systems, as well as the conservation of genetic diversity and the sustainable use of extractive natural resources under their jurisdiction.¹²⁰ As K.L. Koh¹²¹ and M. Islam¹²² point out, the main (foremost) object of the Agreement is conservation of wild flora, fauna and renewable resources including soil, vegetation, fisheries through the protection of ecosystems, habitats and endangered species, and by ensuring sustainable use of harvested ones.

Exploring this Agreement (some authors call it the Convention), N.A. Nguen and K.T. Nguen note that pursuant to experts, it is 'remarkable' and 'progressive'. The Convention, according to the mentioned researchers, is chronologically the second example of ecosystem management (the first example is obviously the Canberra Convention), as it provides for the obligation of the Contracting Parties to adopt the measures necessary to maintain essential ecological processes and life-support systems, to preserve genetic diversity, and to ensure the sustainable utilization of harvested natural resources under their jurisdiction in accordance with scientific principles and with a view to attaining the goal of sustainable development (article 1). And, although the ecosystem approach is expressed in this Convention in a low-productive general form, researchers highly appreciate its progressiveness and innovativeness, all the more so in the Southeast Asian region, where the developing countries are mainly located. The Convention's concept of ecosystem management, they emphasize, remains relevant today, as the ecosystem approach is the most effective and comprehensive approach to the management and conservation of nature and natural resources. The Convention should enter into force and apply to the

¹¹⁸ MS Cipris, Sovremennye mezhdunarodnye rezhimy ohrany i sohraneniya migrirujushhih vidov dikih zhivotnykh. Candidate's thesis (Moscow 2016) 150, 151.

¹¹⁹ ASEAN Agreement on the Conservation of Nature and Natural Resources (opened for signature 9 July 1985, not yet entered into force) (ACNNR) <<http://agreement.asean.org/media/download/20161129035620.pdf>> accessed 15 April 2021.

¹²⁰ MN Kopylov and VA Mishlanova, 'Vklad mezhdunarodnyh organizacij v reshenie jekologicheskikh problem' (2014) 2 Mezhdunarodnoe pravo i mezhdunarodnye organizacii 230.

¹²¹ KL Koh, 'ASEAN Agreement on the Conservation of Nature and Natural Resources, 1985: A Study in Environmental Governance', paper given to the World Parks Congress 2003 (Durban, 8–17 September 2003) 3 <<https://studylib.net/doc/7691261/asean-agreement-on-the-conservation>> accessed 15 April 2021.

¹²² M Islam, 'The ASEAN 1985 Agreement on the Protection of Nature and Natural Resources' (2019) 5(6) International Journal of Legal Developments and Allied Issues 45–46.

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entire South-East Asian region, which was recognized as a single ecosystem. And it is difficult to imagine sustainable development without an ecosystem approach at the regional level.¹²³

I.P. Dudykina also argues that the ASEAN Convention on the Conservation of Nature and Natural Resources focuses on ecosystem management. It recognizes 'the interdependence of living resources, between them and with other natural resources, within ecosystems of which they are part' (preamble), provides the obligations of the Contracting Parties to adopt 'the measures necessary to maintain essential ecological processes and life-support systems' (article 1), as well as 'appropriate measures to conserve animal and plant species whether terrestrial, marine and freshwater, and more specifically... conserve natural, terrestrial, freshwater and coastal or marine habitats' (article 3).¹²⁴

The next agreement aimed at protecting wildlife in an ecosystem context is the Declaration on Conservation of Flora, Fauna and their Habitats¹²⁵ adopted by the United Nations Economic Commission for Europe (UNECE) at its 43rd session (12–22 April 1988) in connection with the deterioration of wildlife in the European region. The Declaration sets out particular aims, the first of which is to conserve living natural resources, in the interests of present and future generations, by maintaining essential ecological processes and life-support systems, preserving genetic diversity, and ensuring sustainable utilization of species and ecosystems. As V.I. Kurylo, I.V. Hyrenko and V.V. Kurzova write, in this Declaration the principles of the first edition of the WCS 1980 were implemented.¹²⁶

Around this time, particular relevance at the international level acquired the problem of conservation of the atmosphere, especially, protection against depletion of its ozone layer, vital for the survival of the Earth. In order 'to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer' on 22 March 1985 in Vienna (Austria) was adopted the Vienna Convention for the Protection of the Ozone Layer¹²⁷. Under the Convention, 'adverse effects' means changes in

¹²³ NA Nguen and KT Nguen, 'Cherez obespechenie jekologicheskoy bezopasnosti k ustojchivomu razvitiyu v regione Jugo-Vostochnoj Azii (mezhdunarodno-pravovoj aspekt)' (2011) 12 Zhurnal nauchnyh publikacij aspirantov i doktorantov <www.jurnal.org/articles/2011/uri50.html> accessed 15 April 2021.

¹²⁴ Dudykina (n. 98) 97, 98.

¹²⁵ ECE Declaration on Conservation of Flora, Fauna and their Habitats (adopted by ECE at its 43rd session April 1988) <www.cambridge.org/core/journals/environmental-conservation/article/ece-declaration-on-conservation-of-flora-fauna-and-their-habitats/E7BF1C0AF22F112D2D9E8249AFD81102> accessed 15 April 2021.

¹²⁶ VI Kurilo, IV Girenko and VV Kurzova, 'Pravove zabezpechennja zberezhennja i vikoristannja genetichnih resursiv roslin cherez prizmu globalizacii problemi bio-bezpeki' (2012) 173(3) Naukovij visnik Nacional'nogo universitetu bioresursiv i prirodokoristuvannja Ukraïni. Series 'Law' 101.

¹²⁷ Vienna Convention for the Protection of the Ozone Layer (adopted 22 March 1985, entered into force 22 September 1988) 1513 UNTS 293 (VCOPOL).

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the physical environment or biota, including changes in climate, which have significant deleterious effects on human health or on the composition, resilience and productivity of natural and managed ecosystems.¹²⁸

Two years later, on 16 September 1987, the Montreal Protocol on Substances that Deplete the Ozone Layer¹²⁹ was adopted for that Convention, and two more years later, on 11 March 1989, the Hague Declaration on the Environment¹³⁰ was done in Hague (Netherlands), which contains an appeal to all States of the world and the competent international organizations to join in developing the legal instruments to protect the atmosphere and ozone layer and to counter climate change, particularly global warming. The Declaration especially stresses that 'the consequences of these phenomena may well jeopardize ecological systems', while the preservation of these ecosystems is the 'fundamental duty'.

For ensuring the sustainable development of the Alpine region, including through the implementation of a comprehensive policy for the preservation and protection of the Alps, the highest mountain system in Europe, the Convention on the Protection of the Alps¹³¹ (Alpine Convention) was signed on 7 November 1991 in Salzburg (Austria). It obliges the Contracting Parties to protect, conserve and, where necessary, rehabilitate the natural environment and the countryside, so that ecosystems are able to function, and also to preserve, reinforce and restore the role of forests, in particular their protective role, by improving the resistance of forest ecosystems.¹³² Analyzing the Alpine Convention, the team of authors, including V.S. Kravtsiv, P.V. Zhuk and I.A. Kolodiichuk, calls it 'a demonstration of the ecosystem approach to solving environmental macro-regional problems at the inter-State level',¹³³ while O.V. Rudenko entitles it 'an example of an ecosystem-based conservation law paradigm' or 'an example of the practical implementation of an ecosystem-based conservation paradigm', because, the scientist summarizes, this Convention, having an ecosystem character, 'provides an example for future mountain conservation initiatives and provides a lesson in developing legal tools to meet the new challenge of time – the ecosystem approach in international environmental law'.¹³⁴

¹²⁸ ibid art 1.

¹²⁹ Montreal Protocol on Substances that Deplete the Ozone Layer (adopted 15 September 1987, entered into force 1 January 1989) 1522 UNTS 3 (Montreal Protocol).

¹³⁰ Hague Declaration on the Environment (adopted 11 March 1989) 28 ILM 1308.

¹³¹ Convention on the Protection of the Alps (adopted 7 November 1991, entered into force 6 March 1995) (Alpine Convention)

[<www.alpconv.org/en/home/convention/framework-convention/>](http://www.alpconv.org/en/home/convention/framework-convention/) accessed 15 April 2021.

¹³² ibid paras 'f', 'h' of part 2 of art 2.

¹³³ Naukovi osnovy formuvannia ta shliakhy realizatsii hirskoi polityky v Ukrainsi.

VS Kravtsiv, PV Zhuk, IA Kolodiichuk et al.; VS Kravtsiv (ed.). (Lviv: DU 'Instytut rehionalnykh doslidzhen imeni MI Dolishnogo NAN Ukrainsi' 2018) 25.

¹³⁴ Rudenko (n. 14).

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With the purpose to take national and international measures and cooperation on the protection, rational use, prevention, control and reduction of transboundary water pollution, on 17 March 1992 in Helsinki (Finland) the Convention on the Protection and Use of Transboundary Watercourses and International Lakes¹³⁵ (Water Convention) was adopted, which O. McIntyre cited as an example of 'a shift in emphasis from a purely territorial and resource-utilization focus, to a more ecosystem-oriented approach', from the practice of States and international organizations in relation to shared water resources.¹³⁶

The Water Convention promotes a holistic approach, taking into account the complex interrelationships between the hydrological cycle, land, flora and fauna, based on the understanding that water is an integral part of the ecosystem, a natural resource and a social and economic good.¹³⁷ Pursuant to this Convention, in order to prevent, control and reduce any transboundary impact the Parties take appropriate measures to ensure conservation and, where necessary, restoration of ecosystems.¹³⁸ As well as they develop, adopt, implement and render compatible relevant legal, administrative, economic, financial and technical measures to ensure that sustainable water-resources management, including the application of the ecosystems approach, is promoted.¹³⁹ As O.M. Spektor writes, the interpretation of this norm should be carried out taking into account the Guidelines on the Ecosystem Approach in Water Management (1993), issued a year later, which consider a river basin as an integral ecosystem and emphasize that water resources should not be managed in isolation from other ecosystem components (land, air, living resources, etc.).¹⁴⁰

Indeed, the interpretation of the Water Convention under consideration should take into account these Guidelines,¹⁴¹ which are intended to assist in the developing and implementing national policies, action plans, programmes and practices for the practical application of the ecosystem approach to day-to-day water management. The proposed measures, as noted in the Guidelines, would ensure a holistic approach to environmentally sound management of inland water resources and riparian vegetation, wetlands, riverine floodplains and associated wildlife and habitats. This approach entails a new level of national and international

¹³⁵ Convention on the Protection and Use of Transboundary Watercourses and International Lakes (adopted 17 March 1992, entered into force 6 October 1996) 1936 UNTS 269 (Water Convention).

¹³⁶ McIntyre (n. 13) 2.

¹³⁷ Konvencija EJeK OON po ohrane i ispol'zovaniju transgranichnyh vodotokov i mezhdunarodnyh ozer 1992 goda (UN, New York, Geneva 2004) 6.

¹³⁸ Water Convention para 'd' of part 2 of art 2.

¹³⁹ ibid para 'I' of part 1 of art 3.

¹⁴⁰ OM Spektor, Mizhnarodno-pravove rehuliuvannia sfery pryrodorersursnykh vidnosyn. Doctor's thesis (Kyiv 2019) 95.

¹⁴¹ Guidelines on the ecosystem approach in water management (1993) <www.unece.org/index.php?id=12847> accessed 15 April 2021.

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awareness and responsibility in solving complex and interrelated problems of the environment.¹⁴²

8. THE ECOSYSTEM APPROACH AND THE CONCEPT OF SUSTAINABLE DEVELOPMENT

In the late 1980s and early 1990s, there was a significant increase in the process of developing the concept of sustainable development at the international level. At the initiative of the United Nations Secretary-General, the World Commission on Environment and Development was established in 1984, chaired by the Prime Minister of Norway G.H. Brundtland (Brundtland Commission). The main objectives of the Commission were: to propose long-term environmental strategies that would enable sustainable development by 2000 and beyond; to consider ways and means by which the world community could effectively address environmental problems. The Commission included about 200 of the world's best experts on environmental issues and development, representing five continents of the planet. The result of its two years of work was the Report 'Our Common Future' submitted to the United Nations General Assembly in 1987.¹⁴³

At the heart of the Report 'Our Common Future'¹⁴⁴ is the concept of sustainable development, that is, development that 'meets the needs of the present without compromising the ability of future generations to meet their own needs'. It is emphasized that 'the concept of sustainable development does imply limits – not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities'.¹⁴⁵ It is further indicated that 'sustainable global development requires that those who are more affluent adopt lifestyles within the planet's ecological means', and that 'sustainable development can only be pursued if population size and growth are in harmony with the changing productive potential of the ecosystem'.¹⁴⁶

Analyzing the Report 'Our Common Future', V.I. Danilov-Daniiljan, K.S. Losev and I.E. Rejf emphasize that its authors, without using the word 'crisis', actually described the biosphere as a crisis, and the demographic situation on the planet was outlined in the same way. However, recognizing the need for certain restrictions in the exploitation of natural resources, they considered these restrictions not absolute but relative, i.e. due to the level of technological development and existing social relations. And both, in their

¹⁴² ibid introduction.

¹⁴³ MM Brinchuk, 'Konsepcija ustojchivogo razvitiya: potrebnosti v sovershenstvovanii' (2015) 1(31) Astrahanskij vestnik jekologicheskogo obrazovaniya 6.

¹⁴⁴ Report of the World Commission on Environment and Development: Our Common Future (1987) <<https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>> accessed 15 April 2021.

¹⁴⁵ ibid para 27.

¹⁴⁶ ibid para 29.

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view, 'can be taken under control and improved, which will open the way to a new era of economic growth'. Scientists write that, not to mention the doubtfulness of such a postulate, the process of extinction of natural ecosystems was not properly assessed in the Report, and biota was actually equated to an economic resource, although it has 'ethical, aesthetic and cultural value'.¹⁴⁷ Of course, the above remark is justified, especially since by the time the Report was published, the dependence of human existence on the conservation and restoration of natural ecosystems had been repeatedly confirmed at the international level.

It is fair to say, and mentioned scientists also pay attention to it, that in July 1991 under the editorship of R. Goodland, H. Daly and S. El Serafy the book 'Environmentally Sustainable Economic Development: Building on Brundtland'¹⁴⁸ was published, where it is recognized that the economic subsystem of human is part of the global ecosystem and depends on it. In this book, it was noted that the global ecosystem is the source of all material inputs feeding the economic subsystem, and is the sink for all its waste. The global ecosystem's source and sink functions have limited capacity to support the economic subsystem. The imperative, therefore, is to maintain the size of the global economy to within the capacity of the ecosystem to sustain it. The global ecosystem, which is the source of all the resources needed for the economic subsystem, is finite and has limited regenerative and assimilative capacities. When the economic subsystem was small relative to the global ecosystem, then the sources and sinks were large, and limits were irrelevant. Leading thinkers have shown for years that the world is no longer 'empty', the economic subsystem is large relative to the biosphere, and the capacities of the biosphere's sources and sinks are being stressed.

The concept of sustainable development has undoubtedly influenced the further legal regulation of biodiversity conservation. Taking an opportunity, it should be said that in September 1989 the World Resources Institute, together with IUCN and UNEP, led an unprecedented three-year initiative to develop a program to prevent the destruction of biological diversity. An International Coordinating Group was created and partners from organizations around the world were involved. The result of this work was the publication in 1992 of the 'Global Biodiversity Strategy: Guidelines for Action to Save, Study, and Use Earth's Biotic Wealth Sustainably and Equitably',¹⁴⁹ which contains 85 Actions for the conservation of biodiversity at the national, international and local levels, and which was crucial to the

¹⁴⁷ Danilov-Danil'jan/Losev/Rejf (n. 21).

¹⁴⁸ RJA Goodland, HE Daly and S El Serafy, Environmentally Sustainable Economic Development: Building on Brundtland (World Bank, Sector Policy and Research Staff, Environment Department 1991) 85.

¹⁴⁹ Global Biodiversity Strategy: Guidelines for Action to Save, Study and Use Earth's Biotic Wealth Sustainably and Equitably (1992)
<http://pdf.wri.org/globalbiodiversitystrategy_bw.pdf> accessed 15 April 2021.

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further development and adoption of the CBD. A significant number of issues in the Strategy relate to the dependence of human life and well-being on the functioning of natural ecosystems and the need to reconcile human actions with the capabilities of nature. It is pointed out that all life on Earth is part of one great, interdependent system. It interacts with, and depends on, the non-living components of the planet: atmosphere, oceans, freshwaters, rocks, and soils. Humanity depends totally on this community of life – this biosphere – of which we are an integral part. Unless we protect the structure, functions, and diversity of the world's natural systems – on which our species and all others depend – development will undermine itself and fail.¹⁵⁰

Thus, both the Report of the Brundtland Commission and the 'Environmentally Sustainable Economic Development: Building on Brundtland' laid on the desk as working documents for the UNCED.¹⁵¹ In addition to the CBD, at the UNCED the Declaration on Environment and Development¹⁵² (Rio Declaration), which contains 27 principles, Agenda 21,¹⁵³ the Forest Principles¹⁵⁴ were adopted, while the United Nations Framework Convention on Climate Change¹⁵⁵ (UNFCCC) was opened for signature.

The Rio Declaration refers to the integrated and integrated nature of the Earth, our home, as well as states that the goal of the Conference is establishing a new and equitable global partnership through the creation of new levels of cooperation among States, key sectors of societies and people.¹⁵⁶ Such cooperation should be in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem.¹⁵⁷ Describing the importance of this Declaration in terms of ecosystem management, scientists argue that in it 'States recognized the ecosystem approach as the basis for ecosystem development'.^{158 159}

Agenda 21 begins with the words that humanity stands at a defining moment in history, confronting with different problems including the continuing deterioration of the ecosystems on which we depend for our well-being. However, integration of environment and development concerns and

¹⁵⁰ ibid foreword.

¹⁵¹ Danilov-Danil'jan/Losev/Rejf (n. 21).

¹⁵² Rio Declaration on Environment and Development (1992) UN Doc. A/CONF.151/26 (Vol. I) 31 ILM 874 (Rio Declaration).

¹⁵³ Agenda 21 (1992) UN Doc. A/CONF.151/26 (Vol. I-III).

¹⁵⁴ Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests (1992) UN Doc. A/CONF.151/26 (Vol. III).

¹⁵⁵ United Nations Framework Convention on Climate Change (adopted 9 May 1992, entered into force 21 March 1994) 1771 UNTS 107 (UNFCCC).

¹⁵⁶ Rio Declaration (n. 152) preamble.

¹⁵⁷ ibid principle 7.

¹⁵⁸ 'Teorija i praktika morskoj dejatel'nosti' (n. 63) 184.

¹⁵⁹ Bekjashev (n. 38) 183.

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greater attention to them will lead to the fulfillment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future.¹⁶⁰ Agenda 21 consists of 4 interlinked sections, while section II contains chapters (9–22) on the conservation of natural ecosystems. For example, chapter 10 'Integrated approach to the planning and management of land resources' notes the imperfection of the resource approach to understanding land. It is stated that land is normally defined as a physical entity in terms of its topography and spatial nature; a broader integrative view also includes natural resources: the soils, minerals, water and biota that the land comprises. These components are organized in ecosystems which provide a variety of services essential to the maintenance of the integrity of life-support systems and the productive capacity of the environment. If, in the future, human requirements are to be met in sustainable manner, it is now essential to resolve these conflicts and move towards more effective and efficient use of land and its natural resources. Integrated physical and land-use planning and management is an eminently practical way to achieve this.

The ecosystem approach was also endorsed by chapter 18 'Protection of the quality and supply of freshwater resources: application of integrated approaches to the development, management and use of water resources' of section II, according to which the general objective is to make certain that adequate supplies of water of good quality are maintained for the entire population of this planet, while preserving the hydrological, biological and chemical functions of ecosystems, adapting human activities within the capacity limits of nature.

The Forest Principles recognize the vital role of all types of forests in maintaining the ecological processes and balance through, *inter alia*, their role in protecting fragile ecosystems.¹⁶¹ That is why national policy formulation with respect to all types of forests should take account of the pressures and demands imposed on forest ecosystems,¹⁶² and pollutants, particularly air-borne pollutants, including those responsible for acidic deposition, that are harmful to the health of forest ecosystems at the local, national, regional and global levels should be controlled.¹⁶³

Since climate change is a major factor in impacting natural ecosystems, the need to protect them is stipulated in the UNFCCC.¹⁶⁴ It states that human activities have been substantially increasing the atmospheric concentrations of greenhouse gases, that these increases enhance the natural greenhouse effect, and that this will result on average in an additional warming of the Earth's surface and atmosphere and may adversely affect natural ecosystems

¹⁶⁰ Agenda 21 (n. 153) preamble.

¹⁶¹ Forest Principles (n. 154) principle 4.

¹⁶² ibid principle 9.

¹⁶³ ibid principle 15.

¹⁶⁴ MM Brinchuk, 'Estestvennye jekologicheskie sistemy i jekologicheskoe pravo. Chast' 1' (2012) 2(20) Astrahanskij vestnik jekologicheskogo obrazovanija 10.

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and humankind.¹⁶⁵ The ultimate objective of this Convention is to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, and which should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change.¹⁶⁶

In general, the UNCED was important not only for the establishment of the concept of sustainable development, but also for the formation of the ecosystem approach, because it was at the UNCED that the CBD was adopted, which 'is the first and only international treaty to take a holistic, ecosystem-based approach to biodiversity conservation and sustainable use'.¹⁶⁷

9. CONCLUDING REMARKS

The ecosystem approach, which is a strategy for the integrated management of land, water and living resources that promotes equitable conservation and sustainable use, is most consistently developed today under the CBD, but numerous references to it can be found in international environmental agreements adopted much earlier.

On the grounds of thorough research of such agreements and scientists' views it becomes apparent that before the adoption of the CBD the issues of protection and conservation of natural ecosystems and implementation of the ecosystem approach had already received wide support at the international level. Despite the fact that some of the analyzed agreements were declarative (Stockholm Declaration 1972, WCN 1982, Rio Declaration 1992, etc.) or did not come into force (ASEAN Convention 1985), were focused on the conservation of only individual ecosystems and their components or ecosystems in a particular regions (Convention on the Conservation of Antarctic Seals 1972, CITES 1973, Agreement on the Conservation of Polar Bears 1973, Bonn Convention 1979, Alpine Convention 1991, etc.), were completely built on an ecosystem strategy (Canberra Convention 1980) or related to this area only indirectly (UNCLOS 1982, Helsinki Convention 1992, Bucharest Convention 1992, etc.), they created the necessary base for the further formation and development of the ecosystem approach as a holistic concept in international environmental law under the CBD.

¹⁶⁵ UNFCCC (n. 155) preamble.

¹⁶⁶ ibid art 2.

¹⁶⁷ Secretariat of the Convention on Biological Diversity (2004) *The Ecosystem Approach (CBD Guidelines)*. Montreal: Secretariat of the Convention on Biological Diversity 2.

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